

WHAT IS CLAIMED IS:

1. A charge pump circuit, comprising:

first and second diodes interposed in series between an input portion for receiving a power source input to an object to be stepped up and an output portion for outputting a stepped up voltage such that a forward direction of each diode is directed to a side of the output portion;

a capacitor interposed on a connecting path between a connecting portion of the first diode on a side of the output portion and a ground, the first diode being disposed on a side of the input portion with respect to the second diode, the capacitor having two connecting portions;

a first switch for conducting and cutting a connecting path between one of the connecting portions of the capacitor and the ground;

a second switch for conducting and cutting a connecting path between the one connecting portion of the capacitor and the input portion; and

a driver for conducting the first switch and the second switch alternately in phases opposite to each other;

wherein a constant current charging and discharging circuit using a follower circuit is interposed at any position on a first path, through which a current flows when a connecting path between the one connecting portion of the capacitor and the ground is conducted by the first switch and a current from

the input portion charges the capacitor, and any position on a second path, through which a current flows when the connecting path between the one connecting portion of the capacitor and the input portion is conducted by the second switch and the  
5 capacitor is discharged; and

the follower circuit comprises:

a transistor interposed at any position on the first path and the second path for controlling an amount of a flowing current flowing through the paths; and

10 a resistor connected in series to the transistor on an upstream side or a downstream side in a current flowing direction of the transistor.

2. The charge pump circuit according to Claim 1,

15 wherein the respective transistors interposed at any positions on the first path and the second path function as the first switch and the second switch.

3. The charge pump circuit according to Claim 1,

20 wherein the charge pump circuit is for vehicle mounting and is used for driving a gate of an FET for controlling a power source for controlling a flowing state of a power source current supplied from a power source line to a load.

25 4. The charge pump circuit according to Claim 2,

wherein the charge pump circuit is for vehicle mounting and is used for driving a gate of an FET for controlling a power source for controlling a flowing state of a power source current supplied from a power source line to a load.

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5. A charge pump circuit, comprising:

first and second diodes interposed in series between an input portion for receiving a power source input to an object to be stepped up and an output portion for outputting a stepped  
10 up voltage such that a forward direction of each diode is directed to a side of the output portion;

a capacitor interposed on a connecting path between a connecting portion of the first diode on a side of the output portion and a ground, the first diode being disposed on a side  
15 of the input portion with respect to the second diode, the capacitor having two connecting portions;

a first switch for conducting and cutting a connecting path between one of the connecting portions of the capacitor and the ground;

20 a second switch for conducting and cutting a connecting path between the one connecting portion of the capacitor and the input portion; and

a driver for conducting the first switch and the second switch alternately in phases opposite to each other;

25 wherein a constant current charging and discharging

circuit using a current mirror circuit is provided at any position on a first path, through which a current flows when a connecting path between the one connecting portion of the capacitor and the ground is conducted by the first switch and  
5 a current from the input portion charges the capacitor, and any position on a second path, through which a current flows when the connecting path between the one connecting portion of the capacitor and the input portion is conducted by the second switch and the capacitor is discharged.

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6. The charge pump circuit according to Claim 5,  
wherein the charge pump circuit is included in an inside  
of an IC.

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